

Monitoring fugitive methane and natural gas emissions, validation of measurement techniques.

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The detection and quantification of fugitive and diffuse methane emissions has become an increasing priority in recent years. As the requirements for routine measurement to support industry initiatives increase there is a growing requirement to assess and validate the performance of fugitive emission measurement technologies. For reported emissions traceability and comparability of measurements is important. This talk will present recent work addressing these needs.

Differential Absorption Lidar (DIAL) is a laser based remote sensing technology, able to map the concentration of gases in the atmosphere and determine emission fluxes for fugitive emissions. A description of the technique and its application for determining fugitive emissions of methane from oil and gas operations and waste management sites will be given.

As DIAL has gained acceptance as a powerful tool for the measurement and quantification of fugitive emissions, and given the rich data it produces, it is being increasingly used to assess and validate other measurement approaches.

In addition, to support the validation of technologies, we have developed a portable controlled release facility able to simulate the emissions from area sources. This has been used to assess and validate techniques which are used to monitor emissions. The development and capabilities of the controlled release facility will be described.

This talk will report on recent studies using DIAL and the controlled release facility to validate fugitive emission measurement techniques. This includes side by side comparisons of two DIAL systems, the application of both the DIAL technique and the controlled release facility in a major study carried out in 2015 by South Coast Air Quality Management District (SCAQMD) in which a number of optical techniques were assessed and the development of a prototype method validation approach for techniques used to measure methane emissions from shale gas sites.

In conclusion the talk will provide an update on the current status in the development of a European Standard for the measurement of fugitive emissions of VOCs and the use of validation data in the standardisation process and discuss the application of this to methane measurement.